

## 7 SYSTEM RELIABILITY, WATER RIGHTS, AND SOURCE WATER PROTECTION

This chapter provides information about water system reliability, including water rights, water supply, and protection of source water for the District's water system.

### 7.1 System Reliability

This Water System Plan summarizes efforts the District has made to ensure that a safe and reliable supply of water can be provided to its customers at all times. Below is a list of provisions and policies the District has undertaken to achieve this goal.

- **Provide access to a sufficient quantity of water to meet customer demands.** These efforts are described below in Sections 7.2 and 7.3.
- **Maintain a reliable supply of water during adverse events such as drought or an emergency.** Section 7.4 below, as well as Chapter 9 (Operations and Maintenance) of this Water System Plan, include information on the District's drought and emergency response planning efforts.
- **Implement adequate planning for and development of facilities.** Facility and system development is described in Chapter 2 (System Description) of this Water System Plan. Chapter 6 (System Analysis) details the District's facility needs in order to meet criteria for fire flows and increasing customer demands during the time this Water System Plan is in effect. In addition, as part of future planning and facilities development, the District and the City of Anacortes have entered into a Joint Operating Agreement that "provides for the cooperation" of the District and City of Anacortes "in development of regional solutions for long range water supply needs". The specifics of this agreement are discussed in Chapter 3 (Related Plans, Agreements, and Policies) and a copy of the agreement is contained in Appendix D.
- **Sustain a water supply that meets water quality requirements.** The District provides a safe drinking water supply by managing and protecting its sources and drinking water treatment processes, and by meeting federal and state drinking water requirements. The efforts the District has undertaken to protect and manage drinking water sources are summarized in Section 7.5 below. The District's compliance with drinking water requirements is described in Chapter 8 (Water Quality).

## 7.2 Source of Supply Analysis

A source of supply analysis is only required for water systems that will be pursuing water rights within 20 years to meet the demand forecast. Based on review of the District's water rights and projected demands, the District has adequate water supply to meet water demand for the next 20 years (see detailed discussion in Section 7.3, Water Rights Evaluation, below). Therefore, the District is not required to complete this section of the Water System Plan. However, the District is proactively providing the following information with respect to source of supply and water system facilities:

- **Water Source.** The District's water supply sources for the Judy System are the Skagit River and four Cultus Mountain streams (Gilligan Creek, Mundt Creek, Turner Creek, and Salmon Creek). Treatment and transmission of the water is described in Chapter 2 (System Description). Chapter 3 (Related Plans, Agreements, and Policies) describes important agreements such as the 1996 Memorandum of Agreement Regarding Utilization of Skagit River Basin Water Resources for Instream and Out Of Stream Purposes (1996 MOA) and the Joint Operating Agreement between the District and other key parties that affect water use and water rights associated with these sources. Section 7.3 below discusses water rights as they relate to water demand, emergency planning, and protection of source water.
- **Water Conservation Program.** The District's water conservation program is described in Chapter 5 (Water Use Efficiency) of this Water System Plan. Chapter 5 contains a review of the District's compliance with state conservation planning requirements, a description of the District's recent conservation program, and an overview of the conservation program that the District will implement from 2014 through 2019.
- **Interties.** The District's interties are listed and described in Chapter 2 (System Description) of this Water System Plan.
- **Facility Analysis.** Chapter 6 (System Analysis) of this Water System Plan provides information regarding the ability of the water system facilities to perform under various operating conditions. Recommended improvements related to system deficiencies are covered in Chapter 10 (Capital Improvement Plan).

## 7.3 Water Rights Evaluation

One of the primary purposes of a water system plan is to ensure that the water system will have sufficient water to meet needs in the foreseeable future. Through development of a water demand forecast and by comparing it with existing water rights, resource planners can evaluate whether the presently allotted quantity of water will adequately meet expected future growth and demand. This section describes the water rights held by the District and shows that the currently allotted supply of water is sufficient to meet the forecasted demand described in Chapter 4 (Planning Data and Water Demand Forecasting).

### 7.3.1 Description of Water Rights

The waters of Washington State collectively belong to the public and cannot be owned by any one individual or group. Instead, individuals or groups may be granted rights to use them. A water right is a legal authorization to use a predefined quantity of public water for a designated purpose. This purpose must qualify as a beneficial use. Beneficial use involves the application of a reasonable quantity of water to a non-wasteful use such as irrigation, domestic water supply, or power generation.

The District currently holds 11 water right certificates and 5 water right applications for the Judy System, as shown in Table 7-1. These water right certificates and applications were documented as part of the 1996 MOA, which is discussed in Chapter 3 (Related Plans, Agreements, and Policies). An additional 7 claims and applications are currently inactive. The signatories of the 1996 MOA agreed not to challenge the water rights captured in the agreement for a 50-year period from the date of signing. The 1996 MOA also resulted in the establishment of the Skagit River Basin Instream Resources Protection Program Rule in 2001. This rule established instream flows<sup>1</sup> for the Skagit River and the Cultus Mountain streams (Gilligan Creek, Mundt Creek, Salmon Creek, and Turner Creek).

The river and stream water rights captured in the 1996 MOA total a maximum instantaneous quantity<sup>2</sup> of 35.8 million gallons per day (MGD). Withdrawals from the streams are subject to instream flow rules. Withdrawals from the river above an instantaneous quantity of 27.52 MGD are subject to the Skagit River instream flow rules. The 1996 MOA in its entirety is provided in Appendix H and the cumulative water rights for the Judy System are detailed in Table 7-2.

Water rights related to storage allow for the impoundment of up to 5,750 acre-feet of water in Judy Reservoir. Additional information related to the District's water rights is provided in Appendix J, including copies of the specific documents issued by the Washington State Department of Ecology (Ecology).

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<sup>1</sup> The term "instream flow" is used to identify a specific stream flow needed to protect and preserve instream resources and values such as fish, wildlife, and recreation. An instream flow rule is, in essence, a water right for fish and other instream resources. While an instream flow rule does not affect existing water rights, water rights issued after the rule adoption are junior to the instream flow, and can only be exercised when the instream flow is being met.

<sup>2</sup> The term "instantaneous quantity", or "Qi", is used to describe the continuous use of water delivered from a source through a diversion. Qi is measured as a rate of flow over some period, usually quantified in terms of cubic feet per second. Qi values related to this discussion have been converted to million gallons per day (MGD) by multiplying the cubic feet per second value by the number of seconds in a 24-hour period.

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**Table 7-1. Judy System Water Rights**

Certificates and Claims-MOA Related*							
Source	Status	Document	Priority Date	Qi (cfs)	Qi (MGD)	Qa (afy)	Comments
Gilligan Creek	Certificated	Vol 1, PG 411	10/10/1929	1.5	0.97	1,086	From Puget Sound Pulp and Timber Co. River added as source.
Gilligan Creek	Certificated	S1-00724C	10/30/1963	8.89	5.75	3,700	Supplemental to certificate 411. River added as source.
Mundt Creek	Certificated	Vol 1, PG 26	9/28/1917	2.5	1.62	1,810	Qa is calculated based on continuous use. River added as source.
Mundt Creek	Certificated	S1-00737C	10/30/1963	8	5.17	3,886	Qa is supplemental to SWC 26 (2,076 primary and 1,810 supplemental) River added as source.
Turner Creek	Certificated	Claim 9333	Pre-1917	4.3	2.78	2,300	Vested right transferred to District. River added as source.
Turner Creek	Certificated	S1-00739C	10/30/1963	6.2	4.01	3,022	Qa is supplemental to claim 009333 (722 primary, 2,300 supplemental). River added as source.
Salmon Creek	Certificated	Claim 9332	Pre-1917	1.8	1.16	307	Vested right transferred to District. River added as source.
Skagit River Ranney Well	Permitted	GWP 3350; Vol 5, PG 2107-A	5/12/1954	8.9	5.75	6,400	Point of withdrawal changed to Skagit River.
Sedro-Woolley Well	Permitted	GWP 2911; Vol 4, PG 1904-A	3/26/1954	2	1.29	1,440	Point of withdrawal changed to Skagit River.
Applications-MOA Related*							
Source	Status	Document	Priority Date	Qi (cfs)	Qi (MGD)	Qa (afy)	Comments
Gilligan Creek	Permitted	S1-25129P	11/16/1987	13.15	8.50	3,700	Qa is supplemental to SWC 411 and S1-00724C. River added as source.
Mundt Creek	Application	S1-27861	10/22/1997	16.06	10.38		River added as source.
Turner Creek	Permitted	S1-27862P	10/22/1997	6.6	4.27	3,022	Qa is supplemental to Claim 009333 and S1-00739C. River added as source.
Salmon Creek	Permitted	S1-18219P	10/30/1963	4	2.59	307	Qa is supplemental to Claim 009332. River added as source.
Skagit River	Application	S1-27860	10/22/1997	12.8	8.27		
Certificates and Claims-Storage							
Source	Status	Document	Priority Date	Qi (cfs)	Qi (MGD)	Qa (afy)	Comments
Judy Reservoir	Certificated	Vol 18, 8738	1/16/1946	n/a	n/a	1,500	Permit R-142.
Judy Reservoir	Certificated	R1-00673C	4/24/1963	n/a	n/a	4,250	Permit R-293. Amended cert. issued 8-19-2004.
Other Certificates and Claims-Inactive							
Source	Status	Document	Priority Date	Qi (cfs)	Qi (MGD)	Qa (afy)	Comments
Rock Springs Creek	Claim	Claim 009334	pre-1917	0.2	0.13	40	Vested right transferred to District.
Pigeon Creek	Claim	Claim 009335	pre-1917	0.2	0.13	40	Vested right transferred to District.
Unnamed creek	Claim	Claim 009336	pre-1917	0.1	0.06	20	Vested right transferred to District.
Cold Springs Creek	Claim	Claim 009337	pre-1917	0.2	0.13	40	Vested right transferred to District.
East Fork Nookachamps Creek	Claim	Claim 009338	pre-1917	1.1	0.71	110	Vested right transferred to District.
Samish River Park	Certificated	G1-00128C	7/26/1971	0.33	0.22	30	Well
Other Applications-Inactive							
Name	Status	Document	Priority Date	Qi (cfs)	Qi (MGD)	Qa (afy)	Comments
Starbird	Application	G1-26742	9/29/1992	1.11	0.72		Wells.
Starbird	Application	G1-27030	3/31/1993	0.78	0.50		Wells.

afy = acre-feet per year; cfs = cubic feet per second; MGD = million gallons per day; Qa = annual quantity; Qi = instantaneous quantity.

\*1996 Memorandum of Agreement Regarding Utilization of Skagit River Basin Water Resources for Instream and Out of Stream Purposes (MOA). Total combined water right available from the river, streams, or a combination of both is 55.39 cfs (35.8 MGD). The total water right not subject to Lower Skagit River Instream Flows is 42.59 cfs (27.52 MGD). Withdrawals from the Cultus Mountain Streams (Gilligan, Mundt, Turner, and Salmon creeks) are subject to Cultus Mountain instream flow rules.

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**Table 7-2. Cumulative Active Water Rights for the Judy System**

Source (not including storage)*	Document	Qi (cfs)	Qi (MGD)	Qa (afy)
Gilligan Creek	Vol 1, PG 411	1.5	0.97	1,086
	S1-00724C	8.89	5.75	3,700
	S1-25129P	13.15	8.50	3,700
<b>Gilligan Creek Subtotal**</b>		<b>22.04</b>	<b>14.24</b>	<b>3,700</b>
Mundt Creek	Vol 1, PG 26	2.5	1.62	1,810
	S1-00737C	8	5.17	3,886
	S1-27861	16.06	10.38	
<b>Mundt Creek Subtotal**</b>		<b>26.56</b>	<b>17.17</b>	<b>3,886</b>
Turner Creek	Claim 9333	4.3	2.78	2,300
	S1-00739C	6.2	4.01	3,022
	S1-27862P	6.6	4.27	3,022
<b>Turner Creek Subtotal**</b>		<b>17.1</b>	<b>11.05</b>	<b>3,022</b>
Salmon Creek	Claim 9332	1.8	1.16	307
	S1-18219P	4	2.59	307
<b>Salmon Creek Subtotal**</b>		<b>5.8</b>	<b>3.75</b>	<b>307</b>
Skagit River Ranney Well	GWP 3350; Vol 5, PG 2107-A	8.9	5.75	6,400
Sedro-Woolley Well	GWP 2911; Vol 4, PG 1904-A	2	1.29	1,440
Skagit River	S1-27860	12.8	8.27	
<b>Skagit River Subtotal**</b>		<b>55.39</b>	<b>35.80</b>	<b>18,755</b>
<b>Total Water Rights (partially subject to instream flow rules)</b>		<b>55.39</b>	<b>35.80</b>	<b>18,755</b>
<b>Total Water Rights (exempt from instream flow rules)</b>		<b>42.59</b>	<b>27.52</b>	<b>18,755</b>

afy = acre-feet per year; cfs = cubic feet per second; MGD = million gallons per day;  
Qa = annual quantity; Qi = instantaneous quantity.

\*Subject to the 1996 Memorandum of Agreement Regarding Utilization of Skagit River Basin Water Resources for Instream and Out of Stream Purposes (MOA). Total combined water right available from the river, streams, or a combination of both is 55.39 cfs (35.8 MGD). The total water right not subject to Lower Skagit River Instream Flows is 42.59 cfs (27.52 MGD). Withdrawals from the Cultus Mountain Streams (Gilligan, Mundt, Turner, and Salmon Creeks) are subject to Cultus Mountain instream flow rules.

\*\*The Skagit River has been added as an additional source for water rights associated with the Cultus Mountain streams.

### **7.3.2 Comparison of Water Rights with Water Demand**

A detailed discussion of the comparison of water rights with water demand is provided in Section 6.2. In summary, the District has adequate water rights to meet the projected demands for the 6-year and 20-year planning periods. The District also has adequate water rights to meet projected demands at the expiration of the MOA in 2046.

## **7.4 Emergency and Water Shortage Planning**

### **7.4.1 Emergency Response Plan**

Emergency response planning is an essential element of managing a water supply system to ensure public health and safety. The District has an Emergency Response Plan (ERP) that acts as a guide for operators and management in an emergency. The ERP lists the procedures these individuals should employ so that disruption of normal services to the District's water customers is minimized and public health and safety are preserved during an emergency.

The ERP provides the steps to be taken during various water system emergency situations. The District has established immediate actions, notifications, and follow-up actions. A copy of the ERP's Table of Contents is included for reference in Appendix K. The contents of the ERP are also discussed in Chapter 9 (Operations and Maintenance).

### **7.4.2 Water Shortage Response Plan**

The 1996 MOA includes a water shortage response plan that outlines a plan of action by the District and the City of Anacortes to reduce the possible impact that diversions could have on the recommended instream flows for the lower Skagit River. The District will monitor the height and flow of the Skagit River utilizing U.S. Geological Survey Gaging Station No. 12200500 near Mount Vernon as a reference. If the flow in the Skagit River is projected to fall below the instream flow levels, the District will implement certain actions set forth in the plan. The actions are based on the level and duration of the reduced flows in the Skagit River. Actions range from raising public awareness, calling for voluntary water use reductions, limiting water withdrawals to quantities exempt from lower Skagit River instream flow rules, maximizing storage in Judy Reservoir, and requesting upstream Skagit River dam operators to commence additional releases. The 1996 MOA in its entirety is provided in Appendix H.

The three sources of water supply to the Judy System (Skagit River, Cultus Mountain streams, and interties with the City of Anacortes system) enable the District to continue operating the Judy System if one of the sources experiences a water shortage. The ability to store approximately 1.45 billion gallons of raw water in Judy Reservoir provides the District with a significant level of additional protection from the effects of water shortages. Depending on actual demand and the quantity of stored water during a water shortage, the District's water treatment plant is able to maintain the supply of finished drinking water to the distribution system for a period of up to 5 months.



Additional information related to the District's planned responses to water shortages is included in the ERP.

## 7.5 Source Water Protection

As an owner and operator of drinking water sources of supply, the District is responsible for meeting requirements for source water protection. Source water for the Judy System is obtained from the Skagit River and the Cultus Mountain Watershed. The general location of the Cultus Mountain Watershed and the point of withdrawal on the Skagit River are shown in Figure 7-1. The District protects these sources of water through two watershed control plans.

Under the Public Water System Coordination Act of 1977, purveyors of public drinking water systems that utilize surface water are required to develop and implement a watershed control plan. The purpose of a watershed control plan is to control sources of potential contamination to the supply of a public drinking water system. These plans and their general strategies are discussed below.

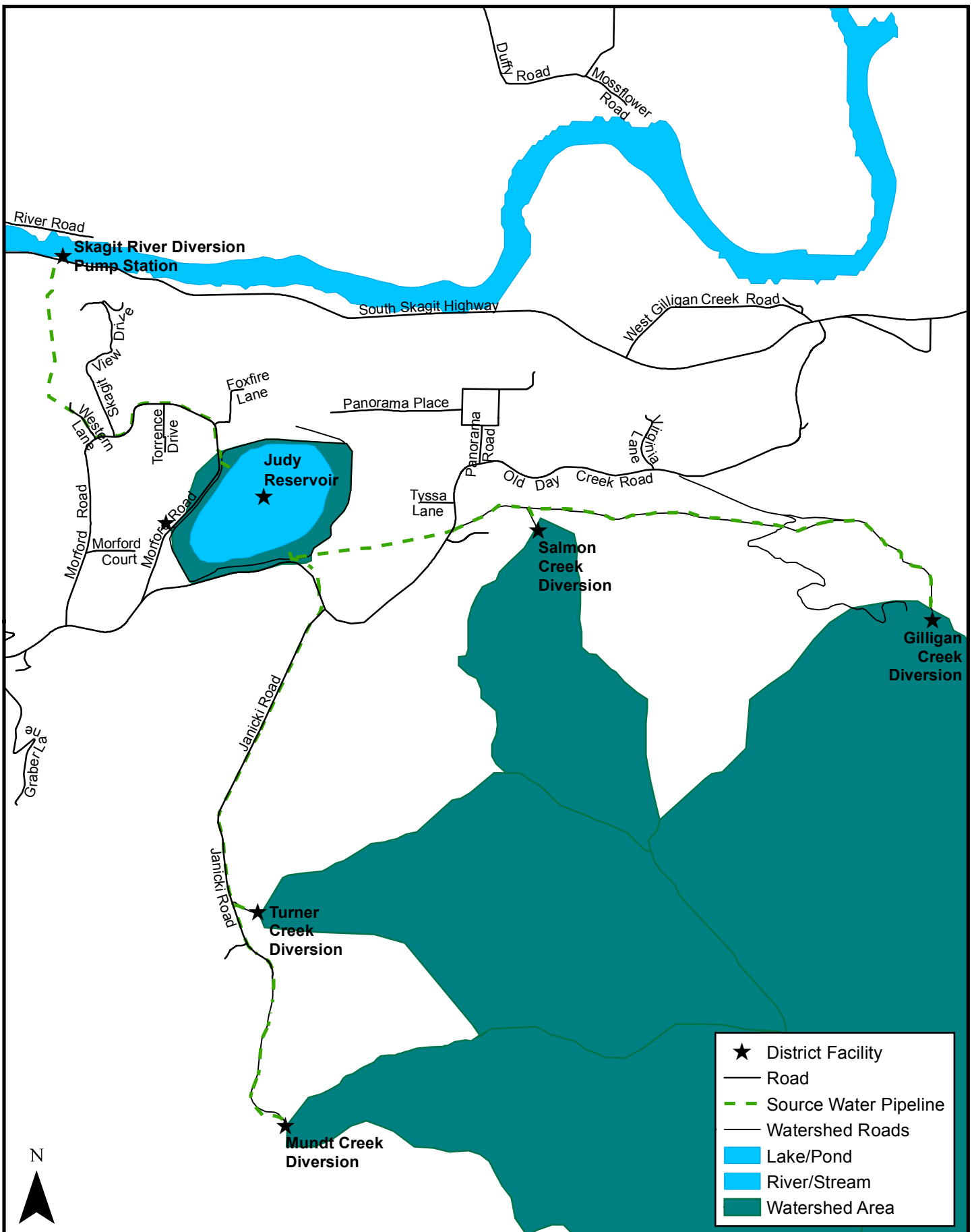
### 7.5.1 Cultus Mountain Watershed

The Cultus Mountain Watershed has been the District's primary source of water since 1939. A Watershed Control Plan for the Judy System was developed by the District in 1994. This document addressed protection of source water from the Cultus Mountain Watershed only, because the ability to withdraw water from the Skagit River was not established until 2009. The Cultus Mountain Watershed Management Plan, updated in 2013 and referenced in Appendix E, has been developed to update and expand on the District's efforts to control potential sources of contamination to water obtained from this area. The updated plan includes the following components:

- Description of the watershed and water system components
- Identification of watershed activities and land uses detrimental to water quality
- Watershed control measures
- System operation and emergency provisions
- Water quality trends
- Recent changes in the watershed
- Opportunities for improved watershed control

This plan describes significant improvements in the District's watershed control efforts, especially related to communication with watershed landowners and monitoring of their activities. The District will continue to build on these improvements by addressing the opportunities for improved watershed control listed in the updated plan.

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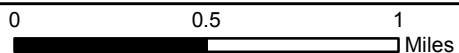
★	District Facility
—	Road
- - -	Source Water Pipeline
—	Watershed Roads
■ (light blue)	Lake/Pond
■ (medium blue)	River/Stream
■ (dark teal)	Watershed Area



**District Facilities Related to the Cultus Mountain Watershed**

2013 Skagit PUD Water System Plan

Coordinate System: WA State Plan North, NAD83



**Figure 7-1**



### 7.5.2 Skagit River

In 2004, the District and the City of Anacortes developed a watershed control plan for the Skagit River. The program area for this plan focused on the 43-mile length of river in the vicinity of water withdrawal points used or planned by the District and the City of Anacortes. An update to the plan was developed in 2010 by the City of Anacortes and is referenced in Appendix F, along with the table of contents from the original 2004 watershed control plan.

The 2004 Skagit River Watershed Control Plan and the 2010 update prepared by the City of Anacortes include a list of program strategies intended to minimize the risk of potential contamination to each organization's public drinking water supplies. The District intends to coordinate with the City of Anacortes to address implementation goals related to each of the categories listed below:

- Public education
- Emergency notification
- Ecology permit holder notification
- Interlocal agreements
- Cooperation

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